

August 30, 2000

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CRUISE REPORT

VESSEL: *Townsend Cromwell*, cruise 91-09 (TC-167)

CRUISE PERIOD: 25 September-28 October 1991

AREA OF OPERATION: Oahu and the Northwestern Hawaiian Islands (NWHI), Necker Island, Maro Reef, Brooks Banks, Midway Island, and area south of Midway Island. (Fig. 1).

TYPE OF OPERATION: The cruise involved day and night cobb trawl tows to determine lobster phyllosome distribution along predetermined transects. The acoustic Doppler current profiler (ADCP) was continuously run throughout the cruise.

ITINERARY:

- 25 September - Start of cruise. On board Thomas K. Kazama, Kevin C. Landgraf, Leslie K. Timme, and Happy A. Williams. Departed Snug Harbor at 1100, Hawaiian standard time, for Oahu trawl stations. Arrived and conducted trawl tows.
- 28 September - Completed 12 required trawls. Departed for Necker Island stations.
- 30 September - Arrived at station and commenced trawl tows.
- 3 October - Completed 12 required trawls. Departed for Maro Reef stations.
- 5 October - Arrived at Maro Reef and commenced trawl tows.
- 7 October - Completed 12 required trawls and proceeded to bank.

- 8 October - Conducted a.m. night-light and bottomfishing station. Departed for Laysan Island. Arrived and conducted p.m. bottomfishing and night-light station. Departed Laysan Island for Midway Island trawl stations.
- 10 October - Arrived at Midway Island station and commenced trawl operations.
- 14 October - Abandoned northern trawl tows beyond 116 nmi because of inclement weather. Completed 12 required trawls and proceeded to Midway Island. Arrived Midway Island at 1300.
- 17 October - Disembarked Landgraf. Departed Midway Island to a position 116 nmi southwest of Midway Island (lat. $26^{\circ}38'N$, long. $178^{\circ}W$). Arrived at station and commenced trawl tows due south to lat. $20^{\circ}53'N$, long. $178^{\circ}W$.
- 20 October - Completed 10 trawls to lat. $20^{\circ}53'N$, long. $178^{\circ}W$ and proceeded back along the same transect in reverse direction. Completed 1 trawl. Suspended p.m. trawls because of inclement weather.
- 21 October - Abandoned trawl transect and proceeded to a position 120 nmi SW of Brooks Banks (lat. $22^{\circ}15'N$, long. $167^{\circ}49'W$).
- 23 October - Arrived at position and commenced trawl operations.
- 26 October - Completed 11 trawls and proceeded to Snug Harbor, Oahu.
- 28 October - Arrived Snug Harbor at 1600. End of cruise.

**MISSIONS
AND
RESULTS:**

- A. Conduct cobb trawl tows to determine the distribution of lobster phyllosome.

The cobb trawl was towed along two spokes to the northeast and southwest, perpendicular to the archipelago axis. Six tows were conducted along each spoke: one starting at 15 nmi from the 100-fm contour out to 21 nmi, the second from 61-67 nmi, and the third from 110 to 116 nmi. The Midway Island spoke was continued due south on long. $178^{\circ}W$, to lat.

20°53'N. Trawl stations were 6 nmi with 40 nmi between tows. Starting at 116-122 nmi, 162-168 nmi, 208-214 nmi, 254-260 nmi, 300-306 nmi, 346-352 nmi, 392-398 nmi, 438-444 nmi, and 484-490 nmi, a day and night tow was conducted, when possible, for each 6 nmi trawl station. Day tows were conducted with a net depth of about 80 m. Depths of night tows were with trawl doors just below the surface water. A total of 59 cobb trawl tows were completed within the planned survey area. Inclement weather prevented 7 (4 day, 3 night) of the intended trawls due south on long. 178°W.

- B. Survey Argos drift buoy location to determine phyllosome distribution within the current boundary. (Alternate cruise instructions.)

Satellite fix on buoy (ID:14435) released March 1, 1991, 15 nmi north of Necker Island, was now positioned south of Brooks Banks (lat. 22°09'N, long. 167°25'W). A total of 11 trawls (5 day, 6 night) were completed on a north to south baseline from Brooks Banks. Trawls were conducted to the east perpendicular to the baseline at 120 nmi, 65 nmi, 40 nmi, and 20 nmi.

1. Trawl catches were frozen in seawater and returned to the Honolulu Laboratory for sorting and identification.
2. The time-depth recorder (TDR) was attached to the net on all tows to determine depth of tow and temperature. The TDR data was consistent with XBT depth-temperature profile, making it possible to trawl in a selected temperature range.

- C. Collect current information using the ADCP.

The horizontal current structure was monitored continuously throughout the cruise.

- D. Conduct night-light stations during the dark phase of the lunar cycle.

Two-hour night-light stations were conducted at Maro Reef and Laysan Island. No lobster puerulus was collected.

- E. Miscellaneous observations and activities.

1. A log of the occurrence of birds, aquatic mammals, and fish schools was maintained by the ship's officers and crew during the cruise.
2. Standard weather observations and XBT casts were made at 0000, 0600, 1200, and 1800 (G.m.t.) by the ship's officers and crew.

3. Bottomfishing stations were conducted at Maro Reef and Laysan Island. Two-hour fishing at Maro Reef resulted in no catch. Twelve fish were caught for age and growth determination during 2 hours of fishing at Laysan Island. Species composition included 9 ehu, *Etelis marshi*, 1 opakapaka, *Pristipomoides filamentosus*, 1 kalikali, *P. auricilla*, and 1 scorpaenid, *Pontinus macrocephalus*.

**SCIENTIFIC
PERSONNEL:**

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Attachment